

WHAT IS CLAIMED IS:

1. A method for separating a krypton-xenon concentrate purified with respect to hydrocarbons, comprising:

5 separating a the krypton-xenon-concentrate flow in a preliminary rectifying column to produce a krypton-fraction flow and a xenon-fraction flow;

rectifying the xenon-fraction flow in an additional xenon rectifying column to produce a purified xenon-fraction flow and a high-boiling-temperature-admixtures flow;

10 producing a purified xenon-fraction flow from an upper zone of the additional xenon column;

separating the purified xenon-fraction flow in a production-xenon column to produce a production-xenon flow and a xenon-column blowing gases flow;

rectifying the krypton-fraction flow in aa additional krypton rectifying column to produce a purified krypton-fraction flow and an intermediate admixtures flow;

15 separating the purified krypton-fraction flow in a production-krypton column to produce a production-krypton flow and a krypton-column blowing gases flow;

rectifying the krypton-column blowing gases flow in a krypton recovery rectifying column to produce a recovered krypton flow and a low-boiling-temperature-admixtures flow; and

20 directing the xenon-column blowing gases flow and the recovered krypton flow into the preliminary rectifying column for separation,

wherein the rectifying columns are put into operation with krypton supplied to the rectifying columns' contacting space, and wherein the rectifying columns comprise evaporating condensers.

25

2. The method of Claim 1, wherein reflux formation in the evaporating condensers of the rectifying columns occurs under conditions precluding its formation of a solid phase.

30 3. A device for separating a krypton-xenon concentrate purified with respect to hydrocarbons, comprising:

WO 2004/045744

PCT/RU2003/000431

a preliminary rectifying column comprising a contact section and a concentration section with an anticipatory assay nipple, the preliminary rectifying column being fed in by a krypton-xenon concentrate line and fed out by a xenon-fraction line and a krypton-fraction line;

5 a production-xenon column comprising an evaporating condenser, a thermal converter, and a concentration section with an anticipatory assay nipple, the production-xenon column being fed in by a purified xenon-fraction line and fed out by a xenon-column blowing gases line, wherein the thermal converter is mounted more than the distance between $0.4H$ and $0.8H$ above the feed point of the purified xenon-fraction line, 10 wherein H is the height of the concentration section;

a production-krypton column comprising an evaporating condenser, a thermal converter, and a concentration section with an anticipatory assay nipple, the production-krypton column being fed in by a purified krypton-fraction line and fed out by a krypton-column blowing gases line, the thermal converter being mounted more than the distance 15 between $0.4H$ and $0.8H$ above the feed point of the purified krypton-fraction line, wherein H is the height of the concentration section;

an additional xenon column comprising a xenon concentration unit and a concentration section with an anticipatory assay nipple, an upper zone of the xenon concentration unit being coupled to a purified xenon-fraction-outlet branch pipe, the 20 purified xenon-fraction-outlet branch pipe being coupled to the purified xenon-fraction line, the additional xenon column being fed in by the xenon-fraction line and fed out by the purified xenon-fraction line and a high-boiling-temperature-admixtures line;

an additional krypton column comprising a concentration section with an anticipatory assay nipple, the additional krypton column being fed in by the krypton- 25 fraction line and fed out by the purified krypton-fraction line and an intermediate admixtures line;

a krypton recovery column comprising a concentration section with an anticipatory assay nipple, the krypton recovery column being fed in by the krypton-column blowing gases line and fed out by a recovered krypton line and a low-boiling- 30 temperature-admixtures line;

a purge collection unit, the purge collection unit being coupled to the xenon-

WO 2004/045744

PCT/RU2003/000431

column blowing gases line, the high-boiling-temperature-admixtures line, the intermediate admixtures line, the low-boiling-temperature-admixtures line and the recovered krypton line ;and

5 pressure increasing units, wherein the xenon-column blowing gases line, the high-boiling-temperature-admixtures line, the intermediate admixtures line, the low-boiling-temperature-admixtures line and the recovered krypton line are coupled, via the pressure increasing units, to the contact section of the preliminary rectifying column.

4. The device of Claim 3, wherein each column comprises an evaporating
10 condenser, the evaporating condenser comprising a closed space filled with a working medium, the closed space separating the boiling surface of a coolant and the condensing surface of reflux vapors, the closed spaces of the evaporating condensers of the preliminary rectifying column, the production krypton column, the production xenon column, the additional krypton column, and the additional xenon column being partially
15 filled with packing, the working medium for these columns being a mixture of oxygen and krypton, and in the closed space of the evaporating condenser of a krypton recovery column the working medium being nitrogen, and wherein the preliminary rectifying column is coupled with a krypton source via a pipe.

20